head that the Kamilaroi were divided by their names into castes with the marriage law which Mr. Ridley first described, and, meeting with an ipai whose wife was an ipata, he regarded him as a daring transgressor of the customary rule. The man told him that he and his wife were free to marry because they were not of the same mudji (totem); and, thereupon, Mr. Lance (who evidently had never before heard of totems) told Mr. Ridley that the ipai were privileged above their neighbours in being free to marry women of their own class who were not of the same family with them; and Mr. Ridley told the world that they were the aristocratic caste among the Kamilaroi. (He has since stated that the murri are the aristocratic class.) This is the sort of observation we are questioning. Had Mr. Lance seen in operation a rule intended to prevent, say a man from marrying his own daughter, he might easily have magnified it into a rule prohibiting two whole "castes" from marrying. And in all probability it was something like this he did. It is the ludicrously wrong impression he had before he met the ipai aforesaid that Mr. Fison has taken for the basis of his hypothesis—but from even that to the hypothesis is a tremendous jump. And, after all, even if we overlook the inadmissible assumption which forms an essential part of the hypothesis, it appears not to be good for anything.

What have been called caste or class names appear, so far as the evidence goes at present, to be names merely, and to have no effect on the right of intermarriage. The system of naming is certainly very peculiar. The names alternate in successive generations. That is not in itself peculiar; but the same name is taken by all the sons, the same name by all the daughters. Thus ipata's children are the sons all kumbo, and the daughters all butha; and, again, butha's children are ipai and ipata. It is a pretty widely spread system. Mr. Howitt says that, as far as he knows, it prevails among all Australian tribes; but this is going a vast deal too far; and is calculated to undermine faith in Mr. Howitt's judgment, for it plainly does not prevail among the Kurnai whom he himself has described. His report shows nothing like castes or classes among them; the men, he says, are all called yeerung (emu-wren) by the women, and the women all djeetgun (superb-warbler) by the men, but this (whatever it may mean, and it may mean very little) does not divide the Kurnai into anything other than men and women. Mr. Fison has had from a number of correspondents statements which he takes to mean that among tribes other than the Kamilaroi which have this system of naming, there is no marriage between persons of the same name; but his correspondents are neither, as regards opportunity or observing power, above Mr. Lance; and Mr. Ridley's study of the Kamilaroi, imperfect as it has been, gives the only evidence that can be regarded as trustworthy. Mr. Fison has amended the list of marriages allowed among the Kamilaroi, given by Mr. Ridley, as he says, on later information; but anonymous information cannot be thought of much value on this matter as against the authority of Mr. Ridley. Mr. Fison is too easily satisfied with anything that seems to make for his view to be indly trusted in such a matter. We find him inferring from there being no marriage between blood-relations—which may mean totem clans—among people who have the class names that there is no marriage within the class. We find totem clans, too, reported to him as classes and ranked by him as classes; and "divisions," which probably mean totem clans, are also ranked by him as classes. On the other hand he candidly gives at least one case in which the class-names are said not to restrict marriage. He gives at the very beginning of his book a native legend of brothers and sisters having married at the first—a legend which both Mr. Morgan and he make much of. We are surprised, however, at his missing the true point of it. What it exhibits is not a movement to "intermarrying divisions" or classes, but to the establishment of totem clans. *These* are all the natives seem to have thought in need of explanation.

We should have been glad to notice Mr. Howitt's account of the Kurnai at some length, but we must be brief. The Kurnai have kinship through males and exogamy—that is, prohibition of marriage within the kindred; and as was to be expected in such a case, the kindreds form local tribes. He does not expressly tell us whether or not these clans or local tribes are distinguished by totems (which shows that he meant to be careful, and that his information was very far from being complete), but incidentally he lets out that they are. When a Kurnai young woman meets a young fellow who, being a stranger, looks as if he might make a husband for her, Do you eat kangaroo, opossum, blacksnake? is her first question after saluting him. Presumably the animal she names is her own totem. If the stranger may eat it he can marry her. As for his discovery of marriage by elopement, we have no doubt that it is (as a missionary friend of his, Mr. Bulmer, hinted to him it must be) a mere product of misconception. Young men among the Kurnai, he says, could get wives only by eloping with them on the proposal of the women. This may be; an Australian young man could scarcely ever get a wife except by running away with her. But how did the elderly men get their wives? He appears never to have asked that. But he is aware that there was a system of exchanges. The Kurnai are polygamous, and no doubt among them, as among other Australians, the elderly men had, by means of exchanges, nearly all the young women for wives. Mr. Howitt writes so candidly, and his account of the Kurnai is in many respects so interesting, that we should gladly have brought ourselves to think better of this discovery of his. But after reading Mr. Fison's most amazing account of the origin of marriage by elopement, we find ourselves shut up to holding that it is simply a big blunder. Nothing else could have elicited so preposterous an explanation. But such words as preposterous fall harshly on the ear, and we would part from our authors without unkindness. Their exertions to advance a growing science are truly commendable. If the result has been rather to mystify than to elucidate, there is but one more illustration of the way in which good intentions, industry, and ingenuity are wasted when men have started in the wrong track.

D. MACLENNAN

NOTES

THE evening discourses at the meeting of the British Association at York will be delivered by Prof. Huxley and Mr. Spottiswoode. Mr. Huxley will speak of the "Rise and Progress of Palæontology" on Friday, September 2, and Mr. Spottiswoode "On the Electric Discharge, its Forms and its Functions," on Monday, September 5.

THE Honorary Fellowship of the Royal College of Surgeons in Ireland was on Wednesday last week conferred on Prof. Helmholtz, and the Honorary Degree of LL.D. by the University of Dublin. On Monday night, at an ordinary meeting of the Royal Society of Edinburgh, Sir William Thomson in the chair, Prof. Helmholtz read a paper on "Electrolytic Conduction." There was a crowded attendance, and Prof. Helmholtz was warmly received.

ON Monday the National Fisheries Exhibition, which has been organised at Norwich under the care of numerous public bodies, from the Board of Trade downwards, was opened by the Prince and Princess of Wales. The exhibition is divided into six classes, as follows:—1. Pisciculture and shell fish culture; 2. Models, trawling gear, drifting gear, canvas and ropes, and inland fishing tackle; 3. Life-saving apparatus, lamps, fog-horns, signalling, &c., architectural plans for fish markets, fish-curing establishments, fish vans, and fishermen's clothing; 4. Pictures, utilisation of condemned fish and fish refuse as a manure, and the cleansing of sewage-polluted streams; 5. Dried, salted, smoked, and tinned fish, shell fish, fish oils, manure, and disinfectants, aquatic flora and fauna, and birds which prey upon fish; 6. Loans. There is in the last class a fine collection of casts made by the late Frank Buckland, which has been lent by the authorities of South Kensington Museum. The exhibits of preserved specimens of aquatic, or rather fish-eating, birds is also highly interesting and instructive. In the class devoted to the culture of fish there are a large number of tanks, troughs, and the various appliances for hatching the ova of fish, for rearing the young fry, &c. There are also shown live fish in a series of aquaria, amongst which are specimens of nearly every variety of fresh-water fish indigenous to this country, the local fauna being especially complete. Next week we hope to give the address which Prof. Huxley, who is now one of the Inspectors of Fisheries, delivered in connection with the Exhibition.

From the *Sydney Morning Herald* we are glad to learn that a zoological station is at last to be established at Watson's Bay, under the direction of Baron N. de Miklouho-Maclay, on a small grant of land obtained from the Government. After a lengthy absence at the Melanesian Islands and in Queensland he has returned with the intention of remaining in Sydney until he can complete what he began in 1878, and see the zoological station firmly established. The land granted by the Government at Watson's Bay is situated near Camp Cove, and is about half an acre in extent. Upon this a cottage of five work-rooms will be erected, and this building will be for the use of naturalists who visit New South Wales for the purpose of studying the zoology and botany of Australia. The Government, understanding its scientific value, have given what assistance they can, and have promised that if 300*l.* be collected by private subscription a similar sum will be contributed towards the expense of erecting the building from the public revenue. The subscriptions up to the present amount to about 200*l.*, and it is hoped there will be no difficulty in obtaining the balance which will be necessary for forming the zoological station on the small scale contemplated for a beginning. This station will be the first of the kind in the southern hemisphere, and will supply a serious want.

The death is announced, at the end of February last, of Mr. Gerard Krefft, the Australian naturalist. Mr. Krefft was born in Brunswick, Germany, in 1830, and early conceived a taste for natural history. After spending some time in the United States he went to Melbourne in November, 1852. Mr. Krefft was selected to accompany the collecting expedition fitted out by the Victorian Government, 1858. Having succeeded the leader in command of the party he returned to Melbourne with a large collection of specimens and a well-filled portfolio, and was engaged by Prof. M'Coy as assistant in the Museum. He gave a report in full about the animals obtained and an account of the manners and habits of the aboriginals, illustrated by numerous sketches. He then resigned his position and returned to Germany. In 1859 he again left home for foreign lands, having obtained from the Hamburg firm, Messrs. Godeffroy and Son, a free passage for a trip round the world, and after a two months' sojourn in South Africa he took up his quarters in Sydney, being appointed secretary to the Australian Museum and assistant to the late Dr. Pittard, its curator. On the death of that gentleman Mr. Krefft succeeded to the vacant curatorship in 1861. During the latter years of his appointment he had a series of disagreements with the trustees of the Museum, which resulted in his leaving that institution, September, 1874. Mr. Krefft was probably the first man who thoroughly studied the reptiles of Australia. Mr. Krefft was a F.L.S., C.M.Z.S., and Member of various other learned societies.

Among Mr. Murray's forthcoming works are the following:—"The Formation of Vegetable Mould through the Action of Worms, with Observations on their Habits," by Charles Darwin, F.R.S.; "The Life and Letters of the late Sir Charles Lyell, Bart.," edited by his sister-in-law, Mrs. Lyell; "The Land of the Midnight Sun," being a narrative of summer and winter journeys through Sweden, Norway, Lapland, and Northern Finland, by Paul B. du Chaillu, of gorilla fame; also a second and revised edition of Mr. W. H. White's "Manual of Naval Architecture."

At the meeting of the Sanitary Institute of Great Britain on April 13, Dr. Richardson read a paper of suggestions for the management of cases of small-pox and of other infectious diseases in the metropolis and large towns. Dr. Richardson maintains the thesis that there should be no aggregation of infectious cases in large central institutions, and describes the objections to such aggregation. He suggests further that the sanitary committee or authority in every parish should have al the special centres of infection in each of its districts thoroughly mapped out, and that it should know, on a calculation of cases occurring in quinquennial periods, what is the permanent accommodation required for its infectious sick. He urges that the required accommodation being known, the local authorities should keep ready at all times within the parish such necessary accommodation in small hospitals situated in different parts of the parish or locality. Dr. Richardson described what he thought should be the size, mode of construction, and position of such hospitals:—(*a*) That each hospital should not be larger than is sufficient to receive twenty-four persons at one time. (*b*) That each should be constructed on the separate system for the patients. (*c*) That each should be constructed of iron, so that it may at any time be absolutely purified by fire throughout all its structure. (*d*) That each should be placed on the upper storey of a building, forming in fact the top storey of one or more houses, so that it may be lighted and ventilated directly from its roof. (*e*) That all the air that passes out of the hospital when it is occupied by infectious persons should pass through fire. (*f*) That each patient should be carried into the hospital by a valved lift, which lift should pass through a shaft, so as to draw up air during its ascent, and which should, when required, be effective for flushing the hospital with air. Dr. Richardson entered into the subject of the organisation of these hospitals in respect to general supervision and nursing. Under this head he recommends—(*a*) That the general supervision should be in the hands of the Medical Officer of Health. (*b*) That the nursing, also under the supervision of the Medical Officer of Health, should be carried out by trained nurses, who might be educated to their work in the Union infirmaries. Lastly he suggested that the medical attendance should be conducted by a special staff of duly qualified medical men acting under the Medical Officer of Health and responsible to the local authority, by whom they should be approved and remunerated. An interesting discussion followed, which was adjourned to the 27th inst.

Under the auspices of the National Health Society the following Drawing-Room Lectures will be delivered at 23, Hertford Street, Mayfair (by kind permission of Mr. Charles Matthews), to commence at 4 o'clock p.m.:—Friday, April 22: Prof. Fleeming Jenkin, F.R.S., "Sanitary House Inspection"; Friday, April 29: Dr. Robert Farquharson, M.P. (formerly Medical Officer of Rugby School), "Health in Public Schools"; Friday, May 6: Mr. C. N. Cresswell, "Sanitary Relations of Local Self-Government"; Friday, May 13: Mr. Henry Power, M.B., F.R.C.S., "Care and Education of the Eye"; Friday, May 20: Dr. Siemens, F.R.S., LL.D., "Stoves and Grates"; Friday, May 27: Mr. Ernest Hart, M.R.C.S., "Recent Progress in Health Knowledge." Tickets may be obtained from the secretary at the offices of the Society, 44, Berners Street, on Mondays and Fridays from 2 to 5, or will be forwarded by post on application. Patronesses: H.R.H. Princess Christian; H.R.H. Princess Louise, Marchioness of Lorne; H.R.H. Princess Mary Adelaide, Duchess of Teck. The president of the Society is His Grace the Duke of Westminster, and the Chairman of Council, Mr. Ernest Hart, M.R.C.S. The objects of the Society are to diffuse sanitary knowledge in every possible way, by the delivery of simple practical lectures on air, ventilation, food, and cookery, the prevention of the spread of infectious disease, and kindred subjects, at working men's clubs, mothers' meetings, and elsewhere, in all parts of London and the suburbs; by the circulation of sanitary tracts and papers; by encouraging the teaching of the laws of health in high schools and Board schools, by offering prizes, &c., to both teachers and pupils; and to secure open spaces for the healthy recreation of the people. Membership is constituted by the payment of 1*l.* 1*s.* annually; life membership by the single payment of 10*l.* 10*s.* Communications to be addressed to Miss Lankester, the Secretary, at the offices of the Society, 44, Berners Street, Oxford Street. It is evident that this Society has adopted effectual means to do a good and highly necessary work; it deserves the heartiest support from all who can in any way lend a helping hand.

Two Art Exhibitions were opened under the auspices of the Sunday Society on Easter Sunday, one at Whitechapel, the other in New Bond Street. That at the East-end consisted of a Loan Collection of Paintings, &c., organised by the Rev. S. A. Barnett, to which the Council on Education contributed largely from the National Collection at South Kensington. More than 2500 persons visited the Exhibition during the day, it being open from 2 till 9 p.m. The West-end Exhibition was the first Exhibition of the new Society of Painter-Etchers at the Hanover Gallery, and this was visited by about 578 members of the Sunday Society between the hours of 4 and 6.30 p.m. On Sunday, April 24, this Exhibition will be open to ticket-holders. Free tickets may be had by all who make a written application, inclosing a stamped and *addressed* envelope to Mr. Mark H. Judge, Hon. Sec. of the Sunday Society, 8, Park Place Villas, W.

The second series of meetings organised by the Sunday Evening Association at the Neumeyer Hall was brought to a successful close on Easter Sunday by a lecture on "Lessing," by Mr. Moncure D. Conway. The hall was crowded, and at the close it was announced that the first annual meeting of the Association would be held in May, and that in the autumn the Committee intended to organise a series of meetings in the different Metropolitan suburbs, in order if possible to start local branches. The object of the Sunday Evening Association is to bring together all persons who, estimating highly the elevating influence of music and the sister arts, literature and science, desire by means of meetings on Sunday evenings to see them more fully identified with the religious life of the people. The subscription is 2*s.* 6*d.* per annum, which may be paid to the treasurer, Mr. Godfrey Shaen, 15, Upper Phillimore Gardens, W.

We take the following from the *Electrician*:—The following correspondence over the telephone wires yesterday, says the Kansas City *Times*, is a further proof of the fact that no one but a bald-headed man could do without one:—"Hello, central!" "Hello!" "Connect me with the signal bureau." "All right—go ahead." "Hello, signal!" "Hello!" "Is it going to thaw to-day?" "Yes, there are indications." "How's the wind?" "Getting round to the south." "Do you think I can safely have my hair cut?" "Wait a minute until I consult the barometer, thermometer, and wind gauge." (Silence for half a minute.) "Hello!" "Hello!" "Yes, you can go ahead. There won't be any change to speak of for the next twelve hours. There is a cold wave moving up the Ohio River, and a snow-storm is reported at Cheyenne, but if I were you I'd take my chances on the hair-cutting." "All right—much obliged." "Good bye."

Mr. Pfoundes has reprinted, in a separate form, his short but interesting paper at the Anthropological Institute, on the "Japanese People: their Origin and the Race as it now exists."

The usual meeting of delegates of the Sociétés Savantes takes place this week at the Sorbonne on a somewhat enlarged scale. It is the first time that members of Parisian societies will meet in combination with their provincial brethren.

A new fortnightly journal, *L'Electricien*, has appeared in Paris.

The *Times*' Swiss correspondent states that the acclimatisation of the ibex in Switzerland would appear to be so far a success. The herd which was turned out some time ago in the Grisons is reported to have got through the winter without damage and as being at present in an excellent state of health.

A correspondent of the *Daily News* points out that the exact time of the great Chios earthquake on the 3rd inst. was 1.50 p.m.

No. 2 of vol. iii. of the *American Antiquarian and Oriental Journal* (Chicago, Jameson and Morse) contains several contributions relating to American archæology, especially on the mound-builders. The editor, the Rev. S. D. Peet, has an article on the military architecture of the emblematic mound-builders, and there are various other contributions from various parts of the States bearing on the life and works of the prehistoric peoples of America. In the Oriental department various interesting points connected with Eastern antiquities are discussed.

Prof. Cornelius Doelter of Grätz has safely returned from his journey to West Africa. He has brought home mineralogical and ethnographical collections.

The Report of the West Kent Natural History Society speaks of its continued prosperity. It contains an interesting address by the President, in which he points out certain important bearings of recent researches on light. Speaking of the Blackheath holes, the President is inclined to think they are over the sites of pockets or pipes in the chalk, and that the cause of the subsidence is the drawing away of the subsoil by the action of water, the subterranean drainage produced by the pumping up of the water by the Kent Water Works at Deptford, drawing away sand and chalk in mechanical suspension.

The following are among the papers in the *Transactions* of the Cumberland Association, part v.:—"Distribution of Boulders in West Cumberland," by J. D. Kendall, F.G.S.; "Soul-Cells and Cell-Souls," from the German of Haeckel, by the Rev. C. H. Parez; "The Influence of Geological Structure on Scenery," by Mr. Kendall; "The Local Museum and its Relation to the Natural History of the District," by Mr. James Arlosh; "The Moths of the District," by Mr. George Dawson; "The Character and Distribution of the Diatomaceæ," by Mr. B. Taylor; "Notes on Inglewood Forest," by Mr. John Jackson.

An Electric Railway is being laid down in the grounds of the Crystal Palace.

The Academy of Natural Sciences of Philadelphia are giving Spring courses of instruction in Invertebrate Palæontology and Mineralogy.

THE additions to the Zoological Society's Gardens during the past week include a Common Rhea (*Rhea americana*) from South America, presented by Mr. A. D. M. Stewart; a Mountain Ka Ka (*Nestor notabilis*) from New Zealand, presented by Dr. A. de Lantour, M.R.C.S.; an Undulated Grass Parrakeet (*Melopsittacus undulatus*) from Australia, two Californian Quails (*Callipepla californica*) from California, two Common Quails (*Coturnix communis*), a Greenfinch (*Ligurinus chloris*), a Goldfinch (*Carduelis elegans*), two Chaffinches (*Fringilla cœlebs*), two Common Crossbills (*Loxia curvirostra*), a Common Lapwing (*Vanellus cristatus*), British, a Barred Dove (*Geopelia striata*), a Nutmeg Bird (*Munia undulata*) from India, two Rufous-necked Weaver-Birds (*Hyphantornis textor*) from West Africa, two Mecca Pigeons (*Columba œnas*, var.), from Tunis, presented by Mr. H. H. Johnston; a Green Turtle (*Chelone viridis*) from West Indies, presented by Mr. J. C. Robinson, R.M.S. *Dunrobin Castle;* a Common Viper (*Viper berus*), two Common Snakes (*Tropidonotus natrix*), British, presented by Mr. J. Poyer Poyer; a Red-faced Saki (*Brachyurus rubicundus*), a Horrid Rattlesnake (*Crotalus horridus*) from South America, a Brown Bear (*Ursus arctos*) from Spain, a Great Kangaroo (*Macropus giganteus*), two Ursine Dasyures (*Dasyurus ursinus*), three Vulpine Phalangers (*Phalangista vulpina*) from Australia, deposited; a Beisa Antelope (*Oryx beisa*), a Banded Ichneumon (*Herpestes fasciatus*), a Squirrel-like Phalanger (*Phalangista sciureus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE SOLAR PARALLAX.—M. Puiseux, in a communication to the Academy of Sciences of Paris, discusses the numerous micrometrical measures made during the last transit of Venus by MM. Mouchez and Turquet at St. Paul's, and MM. Fleuriais and Bellanger at Pekin. If these observations had possessed a high degree of precision he considers that they would have furnished a very exact value of the solar parallax, but unfortunately, so far at least as regards the measures at St. Paul's Island, the conditions were extremely unfavourable; indeed in a note which follows M. Puiseux's communication Admiral Mouchez remarks that the equatorials provided for that station had no special appliances for this class of observation, and worse still, "les observations ont été faites exactement au moment du passage du centre d'un violent cyclone, pendant la courte éclaircie qui accompagne la plus grande dépression barométrique." The instruments in fact were more particularly adapted to proposed observations of contacts, and were very weakly mounted; oscillations were occasioned by the violent wind, so that the practised observers had no confidence in their results. Notwithstanding these circumstances M. Puiseux has discussed the measures, and from the combination which he regards as the most favourable, where 81 observations that appear affected with considerable errors are rejected, leaving 312 measures for calculation, he deduces for the value of solar parallax 9″·05: the mean value of the corresponding residuals is 0″·78, and the extreme residuals − 1″·98 and + 2″·15. Considering that under such disadvantageous conditions the observations accord passably, M. Puiseux thinks there are reasonable grounds to expect that with firmly-mounted instruments micrometrical measures may be obtained at the approaching transit in 1882, which will furnish a pretty exact value of the sun's parallax.

THE DOUBLE-STAR HERSCHEL 3945.—The double-star to which Mr. Birmingham drew attention in NATURE last week on the score of contrasted colours of the components and variability of the principal star has a longer history than is noted in his letter. It is found as a single star of sixth magnitude in Bode's Catalogue, from his own observation, and is Canis Majoris 164. Lalande observed both components on March 2, 1798, magnitude 5 and 7. On January 23, 1835, Sir John Herschel, observing at the Cape, calls them 7 and 8, "large star orange: small, pale blue": and on January 31, 1837, he estimated the magnitudes the same: "large star, very high yellow; small, contrasted blue"; these observations occur in Sweeps 532 and 768. Amongst his micrometrical measures we find for the epoch 1837·153 magnitudes 6½ and 7, and for 1837·301 magnitudes 6½ and 8, with the note "Orange and green, fine contrast of colours." Next we have three meridian observations of the principal star by Argelander in vol. vi. of the "Bonn Observations," on January 26 and March 13 and 14, 1854, magnitudes noted, 5·5, 4·5, and 5·0, and one observation of the companion on March 23 in the preceding year, when it was estimated 7·5. In Heis and Argelander the naked-eye estimate is 5 m. The components are separately noted in Gould's *Uranometria Argentina* A. 5¼ red, B. 7. The star does not occur in D'Agelet, Taylor, or in Argelander's Southern Zones. The mean place for the beginning of the present year is in R.A. 7h. 11m. 31·80s., N.P.D. 113° 6′ 19″·4.

THE TOTAL SOLAR ECLIPSE OF 1878.—In one of the handsomely-executed volumes which issue from the Government Printing Office at Washington, the U.S. Naval Observatory has published the detailed reports of the various expeditions organised for the observation of the total eclipse of the sun on July 29, 1878, which possess a high degree of interest. A large number of wood-engravings and lithographic plates accompany the reports. There is also appended a brief account of the observations made in California during the total solar eclipse of January 11, 1880.

THE EARTHQUAKE OF NOVEMBER 28, 1880, IN SCOTLAND AND IRELAND[1]

THE data on which the paper has been founded have been collected from upwards of fifty stations, and special reliance may be placed on the results, as a large proportion of these stations were lighthouses, in each of which at the time of the occurrence there was a keeper *on watch*, the earthquake having occurred after sunset at a time when the lamps were lighted.

The paper at the outset gave the effects and nature of the shock experienced by various observers at those lighthouse stations where the disturbance was felt.

The data acquired were then discussed, and the following are the general conclusions arrived at:—

1. That the earthquake occurred in November, a month in which many of the British earthquakes are recorded as having happened.
2. That it occurred after a wet and stormy period, which had been preceded by an unusually dry summer and spring; that there was a widespread thunderstorm at the time, and that the barometer was rising slowly over the greater part of the west of Scotland; the average height of the barometer at the lighthouse stations at which the earthquake was felt being at 9 a.m. 29·4 inches, and at 9 p.m. 29·5 inches. The thermometer at 9 a.m. averaged 50° F., and at 9 p.m. 48° F.
3. That the seismal area was about 19,000 square geographical miles, the shock having been felt as far north as the Butt of Lewis, as far south as Armagh in Ireland, as far east as Blair Athole, and as far west as Barra Head Lighthouse, though how much farther it was propagated into the Atlantic it is impossible to say.
4. That the range of the earthquake or distance to which the wave was propagated was greater over the sea than over the land.
5. That the earthquake was not a simultaneous shake over the disturbed area, but was produced by a wave propagated from a centre.
6. That the undulation seems to have been chiefly of an "up and down" character like a wave of the sea, and that calculating the "breadth" from the mean velocity of transit and the minimum duration of the shock, the wave appears to have been fully 1100 feet "broad."
7. That the observations warrant the assumption that a spot near Phladda Lighthouse (north-east of Colonsay) was the source, and calculating the velocities of transit with a point 13 miles south-south-west of Phladda Lighthouse as a centre, it appears that the wave travelled with a greater velocity over the sea-basin than over the land, probably due to the fact that over the sea there was a thinner and lighter crust to throw into vibration; the average velocity on sea journeys being 6·74 geographical miles per minute, and the average velocity on land journeys 4·65 miles per minute, the mean of the whole being about 5¾ miles per minute.
8. That the source of the earthquake lay at or near the great

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[1] By Charles Alex. Stevenson, B.Sc., Edinburgh, communicated to the Royal Society of Edinburgh by Prof. Geikie, F.R.S., March 21, 1881.